AMENDMENTS TO THE CLAIMS

  This listing of claims will replace all prior versions and listings of claims in the

application:

LISTING OF CLAIMS:

  1. (currently amended): ~~A printing method for printing an image on a medium,~~

~~comprising the following steps~~A method for obtaining a correction value that is for correcting

and printing an image constituted by a plurality of dot lines, comprising:

  printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming a plurality of

dot lines in an intersecting direction that intersects the movement direction;

  obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

  ~~printing an image constituted by a plurality of corrected dot lines on the medium by~~

~~correcting each dot line~~obtaining the correction value for each dot line in accordance with the

first information and second information corresponding to a second gradation value that is

different from the first gradation value,

  wherein a correction pattern based on the second gradation value is printed; and

  the second information corresponding to the second gradation value is obtained for each

dot line by measuring a darkness of the correction pattern dot line by dot line.

  2. - 3. (canceled).

4.   (currently amended): The~~A~~ ~~printing~~ method according to claim ~~3~~1,

wherein the darkness of the correction pattern based on the first gradation value and the

darkness of the correction pattern based on the second gradation value are measured dot line by

dot line, and the correction value is determined from the measurement value of each dot line.

5.   (canceled).

6.   (currently amended): The~~A~~ ~~printing~~ method according to claim ~~5~~1,

wherein a plurality of the nozzles are provided for each color of the ink; and

the correction value is calculated for each color by printing the correction pattern in each

color~~; and~~, the correction value of each color being for correcting the darkness of the image for

each color.

~~the darkness of the image is corrected for each color in accordance with the correction~~

~~value of each color.~~

7.   (currently amended): ~~A~~ The ~~printing~~ method according to claim ~~3~~1,

wherein a gradation value at which the darkness becomes a target value is determined by

performing a linear interpolation using two information pairs, the two information pairs being a

pair made up of the gradation value and the measurement value of one of the two correction

patterns and a pair made up of the gradation value and the measurement value of the other of the

two correction patterns; and

a value obtained by dividing a deviation between the determined gradation value and a

reference gradation value corresponding to the target value by that reference gradation value is

taken as the correction value.

8.   (currently amended): A~The printing~method according to claim 7,

wherein the gradation value of one of the two information pairs is higher than the

reference value and the gradation value of the other is smaller than the reference value.

9.   (currently amended): The~A printing~method according to claim 7,

wherein the gradation value of one of the two information pairs is the same value as the

reference value.

10.   (currently amended): A method for obtaining a correction value that is for

correcting and printing an image constituted by a plurality of dot lines, comprising:

        printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming the plurality of

dot lines in an intersecting direction that intersects the movement directions;

        obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

        obtaining the correction value for each dot line in accordance with the first information

and second information corresponding to a second gradation value that is different from the first

gradation value.A printing method according to claim 2,

wherein three information pairs are obtained, the three information pairs being a pair

made up of the gradation value and a measurement value of one of three correction patterns that

are each based on a different gradation value, a pair made up of the gradation value and a

measurement value of another one of the three correction patterns, and a pair made up of the

gradation value and a measurement value of yet another one of the three correction patterns;

if a darkness target value is higher than the second largest measurement value of the three

information pairs, then a gradation value at which the darkness becomes the target value is

determined by linear interpolation using the information including this second largest

measurement value and the information including the measurement value higher than the second

largest measurement value;

if the darkness target value is smaller than the second largest measurement value of the

three information pairs, then the gradation value at which the darkness becomes the target value

is determined by linear interpolation using the information including this second largest

measurement value and the information including the measurement value smaller than the

second largest measurement value; and

a value obtained by dividing a deviation between the determined gradation value and a

reference gradation value corresponding to the target value by that reference gradation value is

taken as the correction value.

11.   (currently amended): A̶The̲ p̶r̶i̶n̶t̶i̶n̶g̶ method according to claim 10,

wherein the second largest gradation value is the same value as the reference value.

12.   (currently amended): A̶ The̲ p̶r̶i̶n̶t̶i̶n̶g̶ method according to claim 10,

wherein the target value is an average value of darkness measurement values of all dot

lines in the correction pattern based on the second gradation value of the three gradation values.

13.   (currently amended): The~~A~~ ~~printing~~ method according to claim 7,

wherein the target value is a darkness measurement value of a darkness sample

representing the darkness of the reference value.

14.   (currently amended): The~~A~~ ~~printing~~ method according to claim 7,

wherein the reference value is selected from a darkness range of a middle-tone region.

15.   (currently amended): The~~A~~ ~~printing~~ method according to claim 1,

wherein the darkness measurement value is a grey-scale measurement value.

16.   (currently amended): A printing method for printing an image on a medium,

comprising:

printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming a plurality of

dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

printing an image constituted by a plurality of corrected dot lines on the medium by

correcting each dot line in accordance with the first information and second information

corresponding to a second gradation value that is different from the first gradation value,

wherein a correction value is calculated for each dot line based on the first information

and the second information; and

an image that is constituted by a plurality of the dot lines that have been corrected

respectively in accordance with the correction value is printed on the medium,A printing method

according to claim 2,

wherein the image data for printing the image includes a gradation value for each dot

formation unit formed on the medium;

if no correction value is associated with these formation units, then:

based on a creation ratio table associating the gradation values with the dot

creation ratios, the creation ratio corresponding to the gradation value of the formation

unit is read out; and

dots are formed in each formation unit on the medium in accordance with the

creation ratio that has been read out; and

if the correction value is associated with these formation units, then:

when reading the creation ratio corresponding to a gradation value from the

creation ratio table, the creation ratio corresponding to a value obtained by changing the

gradation value by the correction value is read out; and

dots are formed in each formation unit on the medium in accordance with the

creation ratio that has been read out.

17.   (original): A printing method according to claim 16,

wherein the dot creation ratio indicates a proportion of a number of dots formed within a

region that has a uniform gradation value and that is made of a predetermined number of the

formation units, to that predetermined number.

18.   (original): A printing method according to claim 16,

wherein the nozzle can form dots of a plurality of sizes; and

in the creation ratio table, a relation between the creation ratios and the gradation values

is set for each size of dots.

19.   (currently amended): The~~A printing~~ method according to claim 1,

wherein the darkness of the correction pattern is measured using a darkness measuring

device that measures darkness optically.

20.   (currently amended): The~~A printing~~ method according to claim 1,

wherein correction patterns are printed based respectively on specified gradation values

including the first gradation value and the second gradation value, for each of the specified

gradation values.

21.   (currently amended): The~~A printing~~ method according to claim 20,

wherein the first information is obtained by determining a new gradation value for

forming a darkness corresponding to the first gradation value by performing a linear

interpolation using information in which the first gradation value and the measurement value of

the correction pattern based on the first gradation value are associated and information in which

a specified gradation value that is different from the first gradation value and a measurement

value of the correction pattern based on that specified gradation value are associated, and

associating the determined new gradation value and the first gradation value; and

the second information is obtained by determining a new gradation value for forming a

darkness corresponding to the second gradation value by performing a linear interpolation using

information in which the second gradation value and a measurement value of the correction

pattern based on the second gradation value are associated and information in which a specified

gradation value that is different from the second gradation value and a measurement value of the

correction pattern based on that specified gradation value are associated, and associating the

determined new gradation value and the second gradation value.

22.   (currently amended): A method for obtaining a correction value that is for

correcting and printing an image constituted by a plurality of dot lines, comprising:

printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming the plurality of

dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

obtaining the correction value for each dot line in accordance with the first information

and second information corresponding to a second gradation value that is different from the first

gradation value. A printing method according to claim 1,

wherein correction patterns are printed based respectively on specified gradation values

including the first gradation value, for each of the specified gradation values;

the first information is obtained by determining a new gradation value for forming a

darkness corresponding to the first gradation value by performing a linear interpolation using

information in which the first gradation value and the measurement value of the correction

pattern based on the first gradation value are associated and information in which a specified

gradation value that is different from the first gradation value and a measurement value of the

correction pattern based on that specified gradation value are associated, and associating the

determined new gradation value and the first gradation value; and

the second information corresponds to the second gradation value at which the printable

gradation value becomes highest.

23.   (currently amended): A method for obtaining a correction value that is for

correcting and printing an image constituted by a plurality of dot lines, comprising:

printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming the plurality of

dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

obtaining the correction value for each dot line in accordance with the first information

and second information corresponding to a second gradation value that is different from the first

gradation value, A printing method according to claim 1,

wherein correction patterns are printed based respectively on specified gradation values

including the first gradation value, for each of the specified gradation values;

the first information is obtained by determining a new gradation value for forming a

darkness corresponding to the first gradation value by performing a linear interpolation using

information in which the first gradation value and the measurement value of the correction

pattern based on the first gradation value are associated and information in which a specified

gradation value that is different from the first gradation value and a measurement value of the

correction pattern based on that specified gradation value are associated, and associating the

determined new gradation value and the first gradation value; and

the second information corresponds to the second gradation value at which the printable

gradation value becomes lowest.

24.   (currently amended): The~~A printing~~ method according to claim 21,

wherein the information in which the first gradation value and the measurement value of

the correction pattern based on the first gradation value are associated, information in which a

specified gradation value that is higher than the first gradation value and a measurement value of

the correction pattern based on this specified gradation value are associated, and information in

which a specified gradation value that is lower than the first gradation value and a measurement

value of the correction pattern based on this specified gradation value are associated are

obtained;

if the darkness corresponding to the first gradation value is higher than the measurement

value of the correction pattern based on the first gradation value, then a linear interpolation is

performed using the information in which the first gradation value and the measurement value of

the correction pattern based on the first gradation value are associated, and the information in

which the specified gradation value that is higher than the first gradation value and the

measurement value of the correction pattern based on this specified gradation value are

associated;

if the darkness corresponding to the first gradation value is smaller than the measurement

value of the correction pattern based on the first gradation value, then a linear interpolation is

performed using the information in which the first gradation value and the measurement value of

the correction pattern based on the first gradation value are associated, and the information in

which the specified gradation value that is lower than the first gradation value and the

measurement value of the correction pattern based on this specified gradation value are

associated; and

a new gradation value for forming the darkness corresponding to the first gradation value

is determined.

25.   (currently amended): The~~A printing~~ method according to claim 24,

wherein an average value of the darkness of each dot line constituting the correction

pattern based on the first gradation value is taken as the darkness corresponding to the first

gradation value.

26.   (currently amended): The~~A printing~~ method according to claim 24,

wherein a darkness measurement value of a darkness sample is taken as the darkness

corresponding to the first gradation value.

27.   (currently amended): The~~A printing~~ method according to claim 1,

wherein the image data for printing the image includes a gradation value for each dot

formation unit formed on the medium; and

the darkness of each of the dot lines is corrected by correcting the gradation value of each

of the formation units.

28.   (currently amended): A method for obtaining a correction value that is for

correcting and printing an image constituted by a plurality of dot lines, comprising:

printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming the plurality of

dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

obtaining the correction value for each dot line in accordance with the first information

and second information corresponding to a second gradation value that is different from the first

gradation value. A printing method according to claim 1,

wherein a new gradation value for forming a darkness corresponding to a gradation value

other than the first gradation value and the second gradation value is determined by linear

interpolation of the first information and the second information.

29.   (currently amended): TheA printing-method according to claim 1,

wherein the correction value is for correcting a dot creation ratio for a gradation value is

corrected based on the first information and the second information.

30. (currently amended): <u>A method for obtaining a correction value that is for correcting and printing an image constituted by a plurality of dot lines, comprising:</u>

<u>printing a correction pattern based on a first gradation value by ejecting ink from a plurality of nozzles moving in a predetermined movement direction and forming the plurality of dot lines in an intersecting direction that intersects the movement direction;</u>

<u>obtaining, for each dot line, first information corresponding to the first gradation value by measuring a darkness of the correction pattern dot line by dot line; and</u>

<u>obtaining the correction value for each dot line in accordance with the first information and second information corresponding to a second gradation value that is different from the first gradation value,</u>

<u>wherein the correction value is for correcting a dot creation ratio for a gradation value,</u>

<u>and</u>~~A printing method according to claim 29,~~

wherein a dot creation ratio for a gradation value other than the first gradation value and the second gradation value is determined by linear interpolation of a dot creation ratio of the first gradation value and a dot creation ratio of the second gradation value.

31. (currently amended): ~~A~~ <u>The</u> ~~printing~~ method according to claim 1,

wherein a plurality of the nozzles are provided for each color of the ink;

the first information is obtained for each color by printing the correction pattern based on the first information in each color; and

each dot line is corrected, color by color, in accordance with the first information and the second information.

32.   (original): A printing method for printing an image on a medium, comprising the following steps:

printing a correction pattern based on a first gradation value and a correction pattern based on a second gradation value different from the first gradation value by ejecting ink from a plurality of nozzles moving in a predetermined movement direction and forming a plurality of dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value and second information corresponding to the second gradation value by measuring a darkness of the correction pattern dot line by dot line;

wherein a correction value is calculated for each dot line based on the first information and the second information; and

an image that is constituted by a plurality of the dot lines that have been corrected respectively in accordance with the correction value is printed on the medium;

wherein:

a plurality of the dot lines are formed in the intersecting direction through alternate repetition of a dot formation operation of forming dots on the medium by ejecting ink from the plurality of nozzles moving in the movement direction and a carrying operation of carrying the medium in the intersecting direction intersecting the movement direction;

a plurality of the nozzles are provided for each color of the ink;

the correction value is calculated for each color by printing the correction pattern in each color; and

the darkness of the image is corrected for each color in accordance with the correction value of each color;

three information pairs are obtained, the three information pairs being a pair made up of the gradation value and a measurement value of one of three correction patterns that are each based on a different gradation value, a pair made up of the gradation value and a measurement value of another one of the three correction patterns, and a pair made up of the gradation value and a measurement value of yet another one of the three correction patterns;

if a darkness target value is higher than the second largest measurement value of the three information pairs, then a gradation value at which the darkness becomes the target value is determined by linear interpolation using the information including this second largest measurement value and the information including the measurement value higher than the second largest measurement value;

if the darkness target value is smaller than the second largest measurement value of the three information pairs, then the gradation value at which the darkness becomes the target value is determined by linear interpolation using the information including this second largest measurement value and the information including the measurement value smaller than the second largest measurement value; and

a value obtained by dividing a deviation between the determined gradation value and a reference gradation value corresponding to the target value by that reference gradation value is taken as the correction value;

the second largest gradation value is the same value as the reference value;

the target value is an average value of darkness measurement values of all dot

lines in the correction pattern based on the second gradation value of the three gradation

values;

the target value is a darkness measurement value of a darkness sample

representing the darkness of the reference value;

the reference value is selected from a darkness range of a middle-tone region;

the darkness measurement value is a grey-scale measurement value;

the image data for printing the image includes a gradation value for each dot

formation unit formed on the medium;

if no correction value is associated with these formation units, then:

based on a creation ratio table associating the gradation values with the dot

creation ratios, the creation ratio corresponding to the gradation value of the

formation unit is read out; and

dots are formed in each formation unit on the medium in accordance with

the creation ratio that has been read out; and

if the correction value is associated with these formation units, then:

when reading the creation ratio corresponding to a gradation value from

the creation ratio table, the creation ratio corresponding to a value obtained by

changing the gradation value by the correction value is read out; and

dots are formed in each formation unit on the medium in accordance with

the creation ratio that has been read out;

the dot creation ratio indicates a proportion of a number of dots formed within a

region that has a uniform gradation value and that is made of a predetermined

number of the formation units, to that predetermined number;

the nozzle can form dots of a plurality of sizes; and

in the creation ratio table, a relation between the creation ratios and the gradation

values is set for each size of dots; and

the darkness of the correction pattern is measured using a darkness measuring

device that measures darkness optically.

33.   (original): A printing method for printing an image on a medium, comprising the

following steps:

printing a correction pattern based on a first gradation value by ejecting ink from a

plurality of nozzles moving in a predetermined movement direction and forming a plurality of

dot lines in an intersecting direction that intersects the movement direction;

obtaining, for each dot line, first information corresponding to the first gradation value by

measuring a darkness of the correction pattern dot line by dot line; and

printing an image constituted by a plurality of corrected dot lines on the medium by

correcting each dot line in accordance with the first information and second information

corresponding to a second gradation value that is different from the first gradation value;

wherein:

correction patterns are printed based respectively on specified gradation values

including the first gradation value, for each of the specified gradation values;

the first information is obtained by determining a new gradation value for forming

a darkness corresponding to the first gradation value by performing a linear interpolation

using information in which the first gradation value and the measurement value of the

correction pattern based on the first gradation value are associated and information in

which a specified gradation value that is different from the first gradation value and a

measurement value of the correction pattern based on that specified gradation value are

associated, and associating the determined new gradation value and the first gradation

value; and

the second information corresponds to the second gradation value at which the

printable gradation value becomes highest or lowest;

the information in which the first gradation value and the measurement value of

the correction pattern based on the first gradation value are associated, information in

which a specified gradation value that is higher than the first gradation value and a

measurement value of the correction pattern based on this specified gradation value are

associated, and information in which a specified gradation value that is lower than the

first gradation value and a measurement value of the correction pattern based on this

specified gradation value are associated are obtained;

if the darkness corresponding to the first gradation value is higher than the

measurement value of the correction pattern based on the first gradation value, then a

linear interpolation is performed using the information in which the first gradation value

and the measurement value of the correction pattern based on the first gradation value are

associated, and the information in which the specified gradation value that is higher than

the first gradation value and the measurement value of the correction pattern based on

this specified gradation value are associated;

if the darkness corresponding to the first gradation value is smaller than the

measurement value of the correction pattern based on the first gradation value, then a

linear interpolation is performed using the information in which the first gradation value

and the measurement value of the correction pattern based on the first gradation value are

associated, and the information in which the specified gradation value that is lower than

the first gradation value and the measurement value of the correction pattern based on

this specified gradation value are associated, and

a new gradation value for forming the darkness corresponding to the first

gradation value is determined;

an average value of the darkness of each dot line constituting the correction

pattern based on the first gradation value is taken as the darkness corresponding to the

first gradation value;

the image data for printing the image includes a gradation value for each dot

formation unit formed on the medium; and

the darkness of each of the dot lines is corrected by correcting the gradation value

of each of the formation units;

a new gradation value for forming a darkness corresponding to a gradation value

other than the first gradation value and the second gradation value is determined by linear

interpolation of the first information and the second information;

a dot creation ratio for a gradation value is corrected based on the first

information and the second information;

a dot creation ratio for a gradation value other than the first gradation value and

the second gradation value is determined by linear interpolation of a dot creation ratio of

the first gradation value and a dot creation ratio of the second gradation value;

a plurality of the nozzles are provided for each color of the ink;

the first information is obtained for each color by printing the correction pattern

based on the first information in each color; and

each dot line is corrected, color by color, in accordance with the first information

and the second information.

34 - 36.   (canceled).